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Relationship of placental weight and fetal outcome among normal and anemic delivered mothers

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Abstract

Anemia is a pathological condition which the oxygen carrying capacity of red blood cells is insufficient to meet body's needs. Which leads to loss of placental weight and poor Perinatal outcome and it is major public health problem throughout the world. The world health organization reports (WHO) estimated that 56 million live in developing countries the most severely affected area is south Asia where as 89% of pregnant women are anemic in India. The purpose of the study was to assess relationship of placental weight and fetal outcome among normal and anemic delivered mothers admitted in labor room of Krishna Hospital Karad Maharashtra, India. Samples were group one 62 mothers Hb>11 gm/dl and group two 62 mothers Hb<11gm/dl.

Methods: Quantitative research approach and comparative, descriptive research design was selected for the present study. The dependent variables are Type of diet, Placental weight, Hb level, mothers weight before delivery and dependent variables are fetal outcome i.e. birth weight, Apgar score, physical maturity. This study was conducted in maternity ward (Labor room) at Krishna Hospital, Karad, Satara District. 62+62=124 anemic and normal mothers who are admitted in labor room for vaginal delivery. The samples were selected by purposive sample techniques. This study was conducted in maternity ward (Labor room) at Krishna Hospital, Karad, Satara District. 62+62=124 anemic and normal mothers who are admitted in labor room for vaginal delivery.

Result: The mean placental weight of anemic mothers (512.8 gms) was significantly higher than mean placental weight of normal mothers (459.4 gms) ($p<0.05$). The mean fetal weight of babies born to normal mothers (2.84 kg) was significantly higher than mean fetal weight babies born to anemic mothers (2.48 kg) ($p<0.05$). The mean fetal length of babies born to normal mothers (51.15 cm) was significantly higher than mean fetal length of babies born to anemic mothers (49.21) ($p<0.05$). The good physical activity was significantly high in fetuses born to normal mothers than fetuses born to anemic mothers while average physical maturity was significantly high in fetuses born to anemic mothers than fetuses born to normal mothers. Anemic mothers shows significant difference ($r= 0.28, P <0.05$) with a positive correlation. This means as the placental weight increases the birth weight also increases and vice-versa.

Conclusion: In Correlation between placental weight and birth weight Group A (Normal mothers) show significant difference ($r= 0.40, P <0.05$) with a positive correlation which means as the placental weight increases the birth weight also increases and vice-versa. There was no correlation between Placental Weight and Fetal Length of babies born to non anemic and anemic mothers. ($p>0.05$).

Keywords: Assess, placental weight, fetal outcome, anemic mother, normal mothers.

Introduction

The placenta- 'the life of the fetus in utero- functions diversely to support the growth of the fetus interacts with the two individuals, the mother and the developing fetus. It is the most accurate record of the infant's prenatal experiences [1]. Anemia during pregnancy is most common and considerable health problem in developing countries, despite the fact that most of anemia cases seen in pregnancy and it is largely preventable and easily treatable if detected in time. Anemia still continues to be a common cause of mortality and morbidity in India. Anemia depends on some factors like socioeconomic status, dietary habit, and lifestyle, communicable and non-communicable diseases [2]. The ability of the fetus to grow and thrive *in utero* depends on the placental function and the average weight of the placenta at term is 508 g. [3]. The ratio between placenta weight and birth weight of the newborn is 1:6 [3]. However, methods of measurement vary widely particularly due to differences in placental preparations [4]. Placental weight and its relationship to infant size at birth have been studied for more than a century [5].

Material and method

Research approach: Quantitative research approach

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Research design: comparative, descriptive research design

Setting: tertiary care Hospitals of Karad City Krishna Hospital, Karad, Maharashtra, India

Study subjects: Mothers who are admitted in labor room for vaginal delivery at Krishna Hospital, Karad, Maharashtra, India. Group I- mothers having Hb >11gm/dl. Group II- mothers having Hb<11gm/dl. The sample size for this study consisted of 124 delivered mothers in that Group I- 62 mothers Hb >11 gm/dl. Group II- 62 mothers Hb<11gm/dl.

Sample Size: 62+62=124 anemic and normal mothers who are admitted in labor room for vaginal delivery.

Sampling Technique: samples were selected by purposive sample techniques

Data collection tool: Demographic variable and base line Performa for collecting maternal and fetal variables and (APGAR score sheet to assess APGAR score at birth and New Ballard’s scale to assess the neonatal maturity).

Results

Table 1: Age Wise Distribution of Mothers in Both the Groups

Mothers age (in years)	Normal Mothers Hb > 11 gm/dl		Anemic Mothers Hb < 11 gm/dl	
	Frequency	Percentage	Frequency	Percentage
18-23	20	32.3	27	43.5
24-29	36	58.1	30	48.4
>30	6	9.7	5	8.1
Total	62	100	62	100

Table: 1 shows group 1, among 62 mothers, 36(58.1%) of them were between 24-29 and 20(12.23%) were between 18-23 years, only 6(9.7%) were >30 years of ages. In group 2,

among 62 mothers, 30(48.4%) of them were between 24-29 and 27(43.5%) were between 18-23 years and only 5(8.1%) were >30 years of age.

Table 2: Parity Wise Distribution of Mothers in Both the Groups

Parity	Normal Mothers Hb>11 gm/dl		Anemic Mothers Hb < 11 gm/dl	
	Frequency	Percent	Frequency	Percent
Primipara	33	53.2	33	53.2
Multipara	29	46.8	29	46.8
Total	62	100	62	100

In group 1, among 62, 33(53.2%) of them were primipara and 29 (46.8%) of them were multipara.

In group 2, among 62 mothers, 33(53.2%) of them were primipara and 29 (46.8%) of them were multipara.

Table 3: Mean & SD of Gestational Age (Weeks) of Mothers at Delivery of in Both the Groups

Gestational age at delivery in weeks			Mean	SD	‘t’ test	p value
	Normal Mothers Hb>11 gm/dl		39.02	1.78		
Anemic Mothers Hb < 11 gm/dl		38.7	1.63	1.06	0.29	

Table: 3 representing Mean and SD of mothers Gestational Age (weeks) of in both the groups Unpaired t test was used to compare between mean GA at delivery (in weeks) of anemic mothers and normal mothers. It revealed that, there was no

significant difference between mean GA at delivery (in weeks) of anemic mothers (38.7) and normal mothers (39.02) ($p>0.05$).

Table 4: Mean & SD of Placental Weight (gms) of Mothers in Both the Groups

Placental weight (gms)			Mean	SD	‘t’ test	p value
	Normal Mothers Hb>11 gm/dl		459.4	74.8		
Anemic Mothers Hb < 11 gm/dl		512.8	89.8	3.6	0.00*	

Table: 4 representing Mean and SD of mothers Placental Weight of in both the groups unpaired t test was used to compare mean placental weight of anemic mothers and normal

mothers. It revealed that mean placental weight of anemic mothers (512.8 gms) was significantly higher than mean placental weight of normal mothers (459.4 gms) ($p<0.05$).

Table 5: Mean & SD of Mothers Hemoglobin (gm/dl) at 1st Trimester in Both the Groups

Mothers Hb (gm/dl) 1 st at Trimester			Mean	SD	‘t’ test	p value
	Normal Mothers Hb>11 gm/dl		11.08	1.25		
Anemic Mothers Hb<11 gm/dl		9.46	0.94	8.17	0.00*	

Table: 6 representing Mean and SD of Mothers Hemoglobin (gm/dl) at 1st Trimester in Unpaired t test was used to compare mean hemoglobin (gm/dl) of anemic mothers and normal

mothers. It revealed that mean Hb of normal mothers at 1st trimester (11.08 gm/dl) was significantly higher than mean Hb of anemic mothers (9.46 gm/dl) ($p<0.05$).

Table 6: Mean & SD of Mothers Hemoglobin (gm/dl) at 3rd Trimester in both the groups

Mothers Hb (gm/dl) at 3 rd Trimester	Normal Mothers Hb>11 gm/dl	Mean	SD	't' test	p value
			12.62		
	Anemic Mothers Hb<11 gm/dl	10.23	0.63	17.37	0.00*

Table 6 shows Unpaired t test was used to compare mean hemoglobin (gm/dl) of anemic mothers and normal mothers. It revealed that mean Hb of normal mothers at 3rd trimester

(12.62 gm/dl) was significantly higher than mean Hb of anemic mothers (10.23 gm/dl) ($p<0.05$).

Table 7: Mean & SD of Mothers Weight (kg) before Delivery in Both the Groups

Mothers weight (kg) before delivery		Mean	SD	't' test	p value
		Normal Mothers Hb>11 gm/dl	61.9		
	Anemic Mothers Hb<11 gm/dl	60.35	8.35	0.9	0.37

Unpaired t test was used to compare mean mothers weight before delivery of anemic mothers and normal mothers. It revealed that, there was no significant difference between

mean weight (in kg) of anemic mothers (60.35) and normal mothers (61.9) ($p>0.05$).

Table 8: Correlation between Placental Weight and Birth weight of Babies Among Both the Groups

	Normal Mothers Hb>11 gm/dl				Anemic Mothers Hb<11 gm/dl			
	LBW		NBW		LBW		NBW	
Mean ± SD	436.67 ± 65.07		466.59 ± 76.89		492.43 ± 88.74		539.26 ± 85.57	
Unpaired t test	t= 1.48, p=0.15				t= 2.10, p=0.04*			
Placental Weight	F	%	F	%	F	%	F	%
≤ 500 gms	12	80	36	76.5	19	54.2	10	37.1
> 500 gms	3	20	11	23.5	16	45.8	17	62.9
Total	15	24.2	47	75.8	35	56.4	27	43.6
Chi square test	$\chi^2= 0.07, p=0.78$				$\chi^2= 1.82, p= 0.18$			

The mean placental weight was 436.67 and SD was ±65.07 among the LBW babies and the mean placental weight was 466.59 and SD was ±76.89 among the NBW babies born to normal mothers. There was no association of placental weight and birth weight of babies (<2500 gm LBW, ≥2500 gm NBW) born to normal mothers ($p>0.05$).

The mean placental weight was 492.43 and SD was ±88.74 among the LBW babies and the mean placental weight was 539.26 and SD was ±85.57 among the NBW babies born to anemic mothers. Mean placental weight of NBW babies was significantly higher than mean placental weight of LBW babies (t= 2.10, p=0.04*). There was no association between placental weight and birth weight of babies (<2500 gm LBW, ≥2500 gm NBW) born to anemic mothers ($p>0.05$).

Association between Demographic Variables and Placental weight:

There was significant association was found between placental weight of non anemic mothers and monthly family income ($p<0.001$) and there was no significant association found between other demographic variables and placental weight. There was no significant association was found between placental weights with demographic variables of anemic mothers.

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